

International Workshop on Biomedical Engineering
at
Osaka Institute of Technology

Abstracts

November 16, 2014

Department of Biomedical Engineering
Osaka Institute of Technology

Preface

It is a great honor and pleasure for us to welcome you all to the International Workshop on Biomedical Engineering at Osaka Institute of Technology. I would like to express our sincere gratitude to all participants.

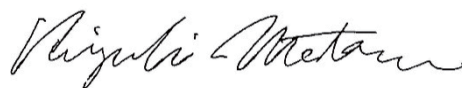
Founded in 1922, Osaka Institute of Technology (OIT) celebrated its 90th anniversary in 2012. Since its establishment, OIT plays an integral role in fulfilling our institution's mission of providing education and conducting researches that lead to a safe and prosperous society.

As a part of such activities, OIT has initiated annual international workshop in 2011 to enhance the collaboration with overseas institutions by exchanging advanced research knowledge. A different thematic area has been selected for each year. In 2011, "The International Workshop on Advanced Materials and Devices" was organized by the Nanomaterials Microdevices Research Center of OIT. The following year, "OIT International Workshop" was organized by the Structure Research Center and focused on Front Research and Technology in Structural Engineering. Last year, "OIT International Workshop" was organized by the Department of Robotics and focused on Human Friendly Robotics.

Then, this year, "The International Workshop on Biomedical Engineering at OIT" is organized by the Department of Biomedical Engineering (BME). This workshop aims to make opportunities for researchers and engineers to exchange their knowledge and to discuss issues regarding recent research developments and technologies in medical engineering, bioengineering, and biological science.

Educational aspect is also relevant for this workshop, so our undergraduate and graduate students are encouraged to participate and discuss their research topics with invited researchers. For this purpose, the invited lecturers who present in oral sessions are kindly asked to discuss details with the audiences in the following poster session. We appreciate for their extra work.

I hope you all enjoy participating in this workshop and exchange information, knowledge, and friendship professionally and personally, and of course, enjoy staying in Osaka during this beautiful autumn season.



Kiyoshi Matsumura, Ph.D

Workshop Chair

Professor, Director of Department of Biomedical Engineering
Osaka Institute of Technology

International Workshop on Biomedical Engineering
at
Osaka Institute of Technology

Organized by
Department of Biomedical Engineering (BME), Faculty of Engineering
Osaka Institute of Technology (OIT)
5-16-1 Omiya, Asahi-ku, Osaka 535-8585, JAPAN
<http://www.oit.ac.jp/english/index.html>

Workshop Chair

Prof. Kiyoshi Matsumura, Director of BME

Organizing Committee

Chair

Prof. Toshia Fujisato, Former Director of BME

Prof. Toshihisa Ohshima, BME
Prof. Masahiko Yoshiura, BME
Prof. Emiko Okuda-Ashitaka, BME
Prof. Ko-ichi Kawahara, BME
Assoc. Prof. Sadahito Uto, BME
Assoc. Prof. Hiroyuki Tonami, BME
Lecturer Taketo Ohmori, BME

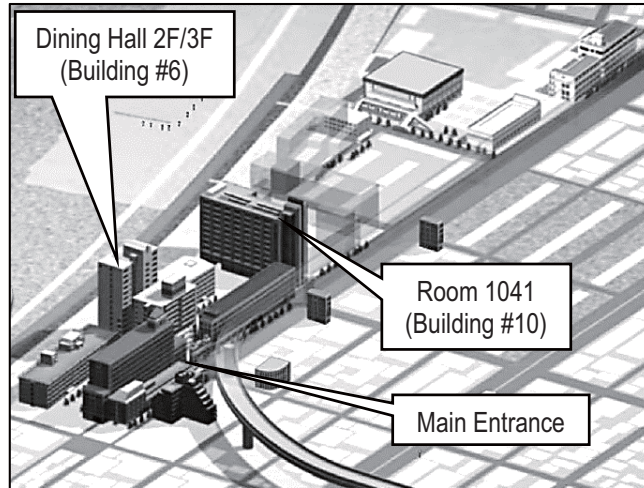
Advisory Committee

Prof. Yutaka Kawata, Vice President of OIT
Prof. Yasushi Nishimura, Dean of Faculty of Engineering, OIT
Mr. Mitsuo Kimura, OIT International Center

Workshop Venue

The workshop is held in the OIT Omiya Campus, 5-16-1 Omiya, Asahi-ku, Osaka 535-8585.

10:00-12:10 **Room 1041:** Sessions 1 and 2
 12:20-13:05 **Dining Hall 2F:** Session 3
 13:15-14:55 **Room 1041:** Session 4
 15:05-17:30 **Dining Hall 3F:** Sessions 5 and 6



From Osaka Itami Airport: 60min

Osaka Airport →(Osaka Monorail)→ Dainichi →(Subway Tanimachi)→ Taishibashi-Imaichi

From Osaka Kansai International Airport: 90-100min

Kansai Airport →(Limousine Bus*)→ Dainichi →(Subway Tanimachi)→ Taishibashi-Imaichi

Kansai Airport →(JR Kansai Kuko)→ Tennoji →(Subway Tanimachi)→ Sembayashi-Omiya

Kansai Airport →(Nankai Kuko)→ Namba →(Subway Midosuji)→ Nakatsu →(Bus #34**)→ Nakamiya

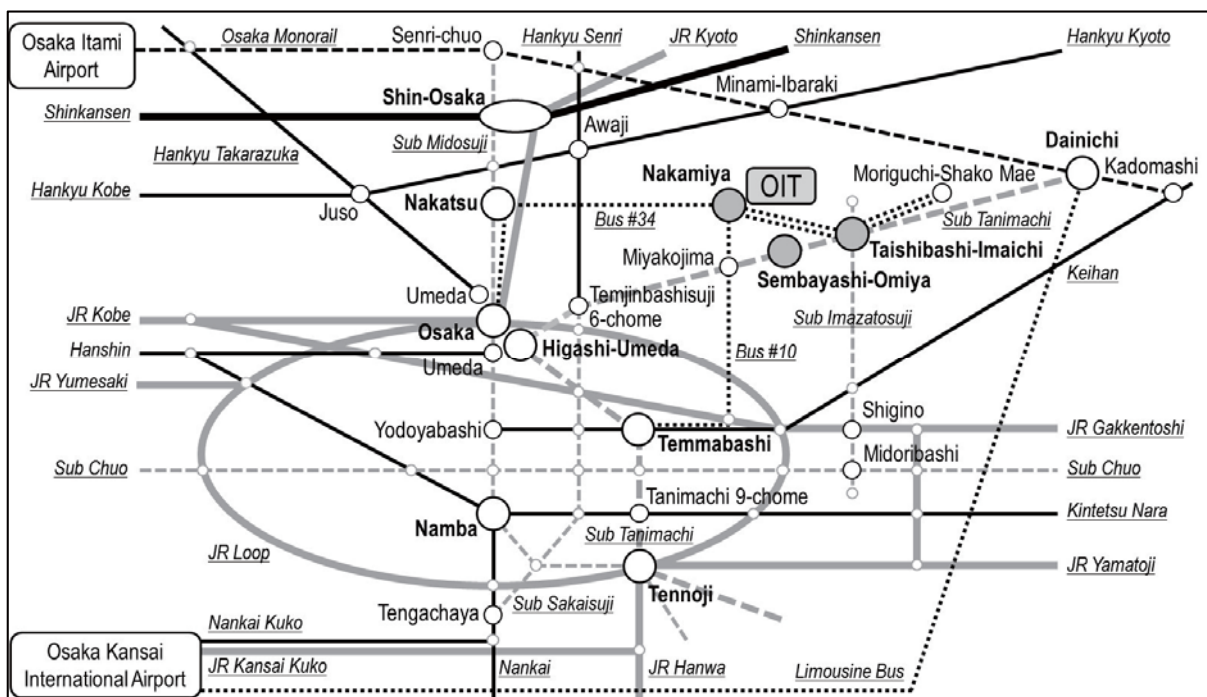
From Shin-Osaka or Osaka Stations: 30-40min

Shin-Osaka →(Subway Midosuji)→ Nakatsu →(Bus #34**)→ Nakamiya

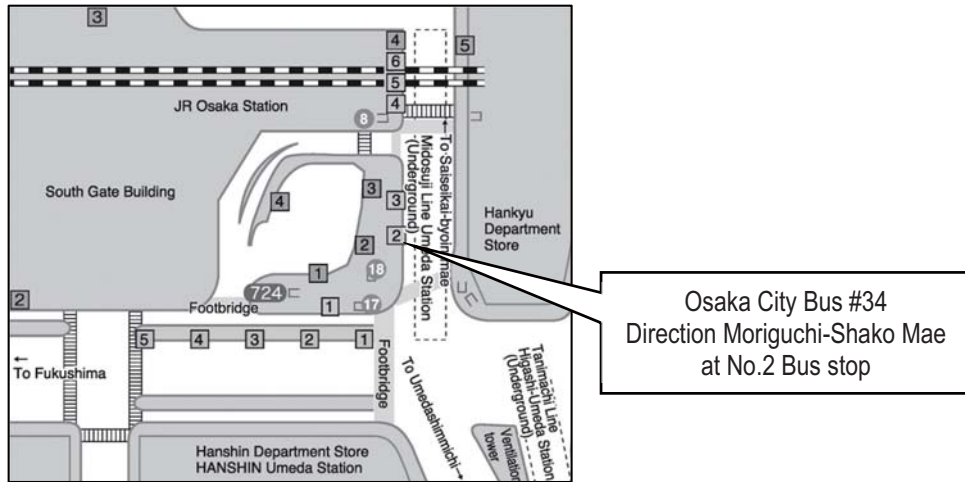
Shin-Osaka →(JR Kyoto)→ Osaka →(Bus #34**)→ Nakamiya

Shin-Osaka →(JR Kyoto)→ Osaka/Higashi-Umeda →(Subway Tanimachi)→ Sembayashi-Omiya

*Limousine Bus runs at intervals of 1hour, **Bus #34 runs at intervals of 5min in daytime on Sundays

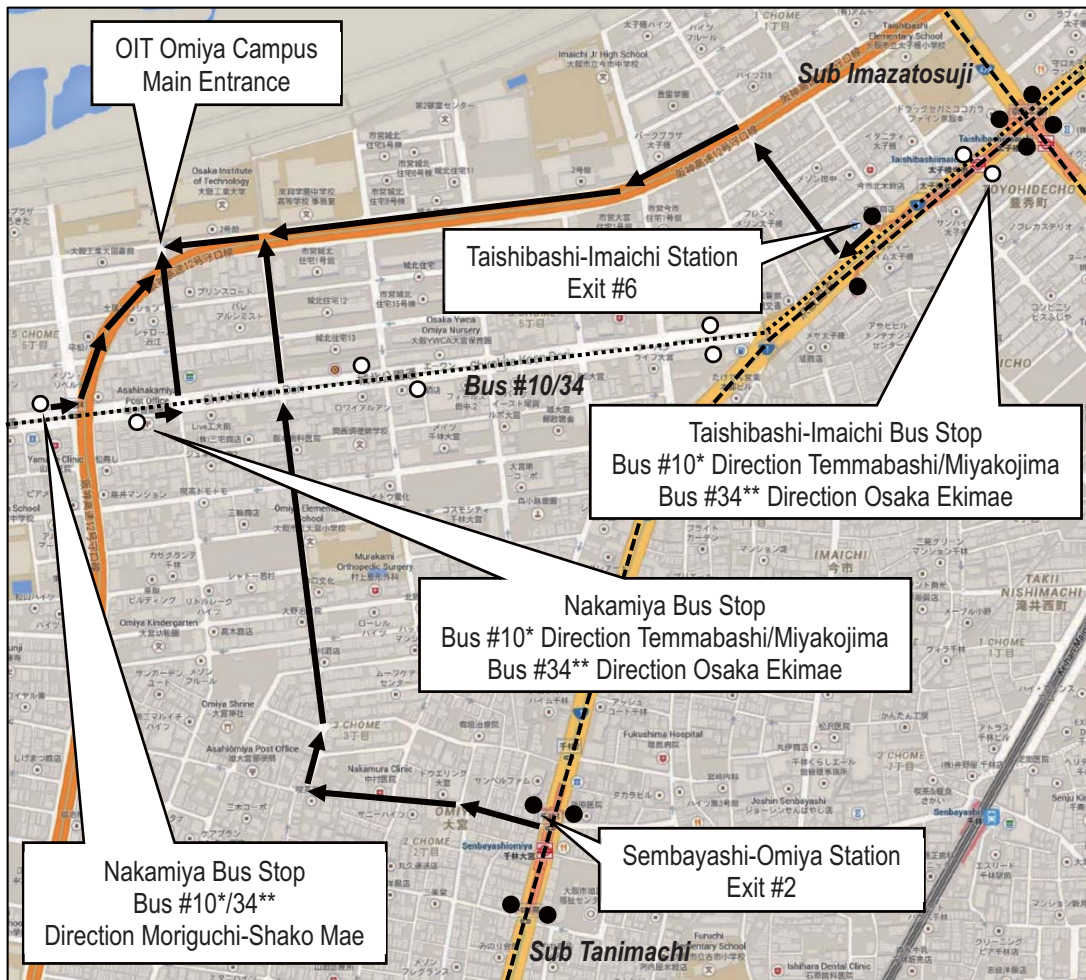


From Osaka station bus stop (Osaka Ekimae Bus Terminal):



<http://www.kotsu.city.osaka.lg.jp/foreign/english/busStop.html>

From Nakamiya bus stop (3min) or Sembayashi-Omiya and Taishibashi-Imaichi subway stations (15min) to OIT Omiya Campus:



*Bus #10 and **Bus #34 runs at intervals of 20min and 5min in daytime on Sundays, respectively
Map data ©2014 Google, ZENRIN

Estimated taxi fares to OIT Omiya Campus (Osaka Kogyo Daigaku in Japanese)

- From Shin-Osaka Station: 20min, ¥2,400
- From Osaka Station: 20min, ¥2,300
- From Dainichi Station: 15min, ¥1,800

Workshop Program

November 16, 2014

[Room 1041]

Session 1: Opening & Introduction of OIT

(Chair: Prof. Toshia Fujisato, BME)

10:00-10:05 Opening Remark

Prof. Yutaka Kawata, Vice President of OIT

10:05-10:15 Summary of OIT

Prof. Yutaka Kawata, Vice President of OIT

10:15-10:30 Summary of BME

Prof. Kiyoshi Matsumura, Director of BME

Session 2: Invited Lecture 1

(Chair: Prof. Toshihisa Ohshima & Prof. Emiko Okuda-Ashitaka, BME)

10:30-10:50 Glycolysis in hyperthermophiles: unusual pathways and enzymes in ancestral organisms Prof. Peter Schönheit (Kiel University, Germany)

10:50-11:10 Bioartificial pancreas: slow progress but much promise

Assist. Prof. Kai-Chiang Yang (Taipei Medical University, Taiwan)

11:10-11:30 Vascular tissue engineering in diabetes

Assist. Prof. Agneta Simionescu (Clemson University, USA)

11:30-11:50 The role of patent system

Dr. Hoon-Sik Shin (Korean Intellectual Property Office, Korea)

11:50-12:10 Pathophysiological mechanisms of hypersomnia: from animal studies to bedside Prof. Seiji Nishino (Stanford University, USA)

[Dining Hall 2F]

Session 3: Lunch Break with Poster Discussion for Session 2

(Chair: Assoc. Prof. Hiroyuki Tonami, BME)

12:20-13:05

[Room 1041]

Session 4: Invited Lecture 2

(Chair: Prof. Masahiko Yoshiura & Prof. Ko-ichi Kawahara, BME)

13:15-13:35 Artificial muscle based on conducting polymers

Prof. Keiichi Kaneto (Kyushu Institute of Technology, Japan)

13:35-13:55 Multiple microfluidic stream based manipulation for single cell

Assist. Prof. Yaxiaer Yalikun (Osaka University, Japan)

13:55-14:15 Cells & ceramics: toolkit for skeletal tissue reconstruction in medicine

Dr. Annie John

(Sree Chitra Tirunal Institute for Medical Sciences & Technology, India)

14:15-14:35 Stem cells and scaffolds for heart valve tissue engineering

Assoc. Prof. Dan Simionescu (Clemson University, USA)

14:35-14:55 Keratin protein degradome: inflammation key to understanding periodontal disease

Assist. Prof. Salunya Tancharoen (Mahidol University, Thailand)

[Dining Hall 3F]

Session 5: Invited Poster Presentation & Poster Discussion for Session 4

(Chair: Assoc. Prof. Sadahito Uto, BME)

15:05-15:50 Protective effect of anthocyanin extract from *Oryza sativa L.* on fluorouracil in oral mucositis rat model

Dr. Prana Shakya (Mahidol University, Thailand)

The role of nitric oxide in *Schizosaccharomyces Pombe* under oxidative stress conditions

Dr. Astuti Rika Indri (Nara Institute of Science & Technology, Japan)

A host factor GANP is involve in anti-HIV-I infectivity response by facilitating the encapsidation of APOBEC3G into virion cores

Dr. Sarah Almofty (Kumamoto University, Japan)

Enhancement of wound healing by controlled release of a macrophage recruitment agent and stromal-cell-derived factor-1

Dr. Yang-Hee Kim (Kyoto University, Japan)

Development of technologies for low-cost and multiplexed detection of microbial pathogens

Dr. Dieter Turlousse

(National Institute of Advanced Industrial Science and Technology, Japan)

Session 6: Banquet with Poster Presentation by OIT students

(Chair: Prof. Toshia Fujisato and Lect. Taketo Ohmori, BME)

16:00-16:45 Transcriptional regulation in brown adipose tissue: possible involvement of nuclear factor kappa B

Tomohiro Inoue (physiology Lab)

Mechanisms of fever following intracranial hemorrhage

Yuki Hirai (physiology Lab)

In vitro anti-thrombotic evaluation of biomaterials by using the ATP-luminescence method

Naoaki Ishino (Biomaterials Lab)

Effect of heat stimulation on contractile properties of tissue-engineered skeletal muscle

Shunya Takagi (Biomaterials Lab)

Tissue-engineered skeletal muscle using collagen sponge scaffold

Shohei Hatoma (Biomaterials Lab)

Production of nitric oxide in the spinal cord of streptozotocin-induced diabetic mice

Kana Ohno (Molecular and Functional Biology Lab)

Nociceptin-induced allodynia via JNK activation in spinal cord

Kenta Kawabata (Molecular and Functional Biology Lab)

Extracellular histones activate IL-1 β production in macrophages

Kae Oike (Functional foods Lab)

Study on contraction of cultured muscle cells with Grayanotoxin

Bayan Almofty (Bioelectronics Lab)

Study on local electrical impedance tomography with small electrode array

Masayuki Kobayashi (Bioelectronics Lab)

SPR of liquid crystal thin film using a high refractive index prism

Haruka Kawai (Bioelectronics Lab)

Development of display using hydroxypropyl cellulose liquid crystal

Hikaru Sugawa (Bioelectronics Lab)

16:45-17:25 Banquet continued

17:25-17:30 Closing Remark

Prof. Kiyoshi Matsumura, Director of BME